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EXAMINER
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TORRES, JOSEPH D

ART UNIT	PAPER NUMBER
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2133

DATE MAILED: 12/01/2004

Please find below and/or attached an Office communication concerning this application or proceeding.

## Office Action Summary

Application No.

10/066,658

Applicant(s)

ZHENG ET AL.

Examiner

Joseph D. Torres

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

### Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

### Status

- 1) ☒ Responsive to communication(s) filed on 07 October 2004.
- 2a) ☒ This action is **FINAL**.                      2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

### Disposition of Claims

- 4) ☒ Claim(s) 35-46 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 35-46 is/are rejected.
- 7) ☐ Claim(s) \_\_\_\_\_ is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

### Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 07 October 2004 is/are: a) ☐ accepted or b) ☒ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

### Priority under 35 U.S.C. § 119

- 12) ☐ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☐ All    b) ☐ Some \*    c) ☐ None of:
1. ☐ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

### Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date \_\_\_\_\_.
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_.

## **DETAILED ACTION**

### ***Election/Restrictions***

1. Applicant's election without traverse of Group IV, claims 35-44 in the reply filed on 10/07/2004 is acknowledged.

### ***Drawings***

2. The proposed drawing corrections received on 10/07/2004 are approved. New corrected drawings with proposed correction in compliance with 37 CFR 1.121(d) are required. Applicant is advised to employ the services of a competent patent draftsman outside the Office, as the U.S. Patent and Trademark Office no longer prepares new drawings. The corrected drawings are required in reply to the Office action to avoid abandonment of the application. The requirement for corrected drawings will not be held in abeyance.

### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the first paragraph of 35 U.S.C. 112:

The specification shall contain a written description of the invention, and of the manner and process of making and using it, in such full, clear, concise, and exact terms as to enable any person skilled in the art to which it pertains, or with which it is most nearly connected, to make and use the same and shall set forth the best mode contemplated by the inventor of carrying out his invention.

3. Claims 35-46 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the written description requirement. The claim(s) contains subject matter

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which was not described in the specification in such a way as to reasonably convey to one skilled in the relevant art that the inventor(s), at the time the application was filed, had possession of the claimed invention. Claims 35 and 39 recite, "performing sequentially intra-block permutations on the sequence of M sub-blocks in a **block-by-block manner**" [Emphasis Added]. Nowhere in the application does the Applicant define what is meant by "block-by-block manner" especially as it relates to sub-blocks. Claims 35 and 39 recite, "once the intra-block permutations has initiated". Nowhere in the application does the Applicant define what is meant by "once the intra-block permutations has initiated".

The newly introduced limitations are new matter.

Claims 35-46 are rejected under 35 U.S.C. 112, first paragraph, as failing to comply with the enablement requirement. The claim(s) contains subject matter which was not described in the specification in such a way as to enable one skilled in the art to which it pertains, or with which it is most nearly connected, to make and/or use the invention.

Claims 35 and 39 recite, "D is half of a permutation spread of the inter-block permutation in the sub- blocks". The term "permutation spread" is not taught in the Application in a manner that would have reasonably apprised one of ordinary skill in the art at the time the invention was made as to what is meant by permutation spread.

Note: examples of what a permutation spread may be, do not comprise a useful definition.

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

4. Claims 35-46 are rejected under 35 U.S.C. 112, second paragraph, as being incomplete for omitting essential structural cooperative relationships of elements, such omission amounting to a gap between the necessary structural connections. See MPEP § 2172.01. Claims 35 and 39 recite, "grouping a source sequence of symbols into a sequence of M sub-blocks". The omitted structural cooperative relationships are: the relationship between a "source sequence of symbols" and "M sub-blocks" (Note: placing the "source sequence of symbols" in a single sub-block and leaving M-1 sub-blocks empty is a grouping). Furthermore, M is not defined and the relationship between M sub-blocks and a block is unclear (Note: the use of the word sub-block implies that the sub-blocks are sub-blocks of a block and it is not clear how many or how the sub-blocks are arranged in a block).

Claims 35 and 39 recite, "grouping the intra-block permute sequence into an intra-permuted sequence of sub-blocks". The omitted structural cooperative relationships are: the relationship between an "intra-block permute sequence" and "intra-permuted sequence of sub-blocks" (Note: a sequence is generally an ordered list of elements and a sub-block is a set or ordered set of elements; it is unclear how intra-block permute sequence intra-block permute sequence relates to a intra-permuted sequence of sub-blocks).

Claims 35 and 39 recite, "once the intra-block permutations has initiated". The omitted structural cooperative relationships are: the relationship between intra-block

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permutations and a process that can be initiated (a permutation is a re-arrangement of data elements not a process that can be initiated).

Claims 35 and 39 recite the limitation, "re-ordering the symbols in each block of the intra-permuted sequence of sub-blocks across a number of sub-blocks". The omitted structural cooperative relationships are: the relationship between sub-blocks and a block is unclear (Note: the use of the word sub-block implies that the sub-blocks are sub-blocks of a block and it is not clear how many or how the sub-blocks are arranged in a block)

Claims 35 and 39 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

Claims 35 and 39 recite, "once the intra-block permutations has initiated". The Examiner asserts that a permutation is a re-arrangement of data elements not a process that can be initiated.

Claims 35 and 39 recite the limitation "the intra-block permuted sequence of sub-blocks". There is insufficient antecedent basis for this limitation in the claim.

Claims 35 and 39 recite the limitation, "re-ordering the symbols in each block of the intra-permuted sequence of sub-blocks across a number of sub-blocks", which makes no sense since the relationship between blocks and sub-blocks is not defined.

The term "across a number of sub-blocks" in claims 35 and 39 is a relative term which renders the claim indefinite. The term "across a number of sub-blocks" is not defined by

the claim, the specification does not provide a standard for ascertaining the requisite degree, and one of ordinary skill in the art would not be reasonably apprised of the scope of the invention. "a number" is arbitrary and it is not clear how many sub-blocks are involved.

Claims 35 and 39 recite, " $K^{\text{th}}$  sub-block".  $K$  is undefined.

Claims 35 and 39 recite, "D is half of a permutation spread of the inter-block permutation in the sub-blocks". A permutation is a re-arrangement of data elements, hence it is unclear what a permutation has to do with half of a permutation spread. As a result,  $D$ ,  $E_k$  and  $L_k$  are undefined.

Claims 45 and 46 need to be rewritten in meaningful English.

### ***Claim Rejections - 35 USC § 101***

35 U.S.C. 101 reads as follows:

Whoever invents or discovers any new and useful process, machine, manufacture, or composition of matter, or any new and useful improvement thereof, may obtain a patent therefor, subject to the conditions and requirements of this title.

Claims 35-41 are rejected under 35 U.S.C. 101 because the disclosed invention is inoperative and therefore lacks utility. Claims 35 and 39 recite language that is impossible to understand and hence renders the limitations in claims 35 and 39 inoperative. For example, "re-ordering the symbols in each block of the intra-permuted sequence of sub-blocks across a number of sub-blocks". See previous rejections.

***Response to Arguments***

5. Applicant's arguments filed 10/07/2004 have been fully considered but they are not persuasive.

The Examiner asserts that newly added limitations of the claims have so many 112 issues, it is not clear how or what additional limitations the Applicant is attempting to claim, hence the Examiner maintains all previous rejection.

The Examiner disagrees with the applicant and maintains all rejections of claims 35-37 and 39-42. All amendments and arguments by the applicant have been considered. It is the Examiner's conclusion that claims 35-37 and 39-42 are not patentably distinct or non-obvious over the prior art of record in view of the reference, Suda; Hirohito et al. (US 6553516 B1, hereafter referred to as Suda) as applied in the last office action, filed 07/12/2004. Therefore, the rejection is maintained.

***Claim Rejections - 35 USC § 102***

The following is a quotation of the appropriate paragraphs of 35 U.S.C. 102 that form the basis for the rejections under this section made in this Office action:

A person shall be entitled to a patent unless –

(e) the invention was described in (1) an application for patent, published under section 122(b), by another filed in the United States before the invention by the applicant for patent or (2) a patent granted on an application for patent by another filed in the United States before the invention by the applicant for patent, except that an international application filed under the treaty defined in section 351(a) shall have the effects for purposes of this subsection of an application filed in the United States only if the international application designated the United States and was published under Article 21(2) of such treaty in the English language.



6. Claims 35-37, 39-42, 45 and 46 are rejected under 35 U.S.C. 102(e) as being anticipated by Suda; Hirohito et al. (US 6553516 B1, hereafter referred to as Suda). See the Non-Final Action filed 07/12/2004 for detailed action of prior rejections.

35 U.S.C. 102(e) rejection of claims 45 and 46.

Claims 45 and 46 are so badly written, it is unclear how the claims add any meaningful limitation to claims 35 and 39, hence see rejections to claims 35 and 39.

### ***Claim Rejections - 35 USC § 103***

The following is a quotation of 35 U.S.C. 103(a) which forms the basis for all obviousness rejections set forth in this Office action:

(a) A patent may not be obtained though the invention is not identically disclosed or described as set forth in section 102 of this title, if the differences between the subject matter sought to be patented and the prior art are such that the subject matter as a whole would have been obvious at the time the invention was made to a person having ordinary skill in the art to which said subject matter pertains. Patentability shall not be negated by the manner in which the invention was made.

The factual inquiries set forth in *Graham v. John Deere Co.*, 383 U.S. 1, 148 USPQ 459 (1966), that are applied for establishing a background for determining obviousness under 35 U.S.C. 103(a) are summarized as follows:

1. Determining the scope and contents of the prior art.
  2. Ascertaining the differences between the prior art and the claims at issue.
  3. Resolving the level of ordinary skill in the pertinent art.
  4. Considering objective evidence present in the application indicating obviousness or nonobviousness.
7. Claim 38, 43 and 44 is rejected under 35 U.S.C. 103(a) as being unpatentable over Suda; Hirohito et al. (US 6553516 B1, hereafter referred to as Suda) in view of Kim; Min-Goo et al. (US 6598202 B1, hereafter referred to as Kim).

35 U.S.C. 103(a) rejection of claim 38, 43 and 44.

Suda substantially teaches the claimed invention described in claims 35-37 and 39-42 (as rejected above).

However Suda does not explicitly teach the specific use of a de-interleaver for the interleaver taught in the Suda patent.

Kim, in an analogous art, teaches a means for performing intra-row permutations on a sequence of symbols to produce an intra-row permuted sequence and means for performing inter-row permutations on the intra-row permuted sequence of symbols (Note: a row is a block of data). Col. 5, lines 61-67 in Kim teaches that a deinterleaver performs the same operations as the interleaver on the intra-row and inter-row permuted interleaved data but in reverse order to recover the original non-interleaved sequence.

Therefore, it would have been obvious to one of ordinary skill in the art at the time the invention was made to modify Suda with the teachings of Kim by including use of a de-interleaver for the interleaver taught in the Suda patent. This modification would have been obvious to one of ordinary skill in the art, at the time the invention was made, because one of ordinary skill in the art would have recognized that use of a de-interleaver for the interleaver taught in the Suda patent would have provided the opportunity to deinterleave interleaved data.

***Conclusion***

8. Applicant's amendment necessitated the new ground(s) of rejection presented in this Office action. Accordingly, **THIS ACTION IS MADE FINAL**. See MPEP § 706.07(a). Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire THREE MONTHS from the mailing date of this action. In the event a first reply is filed within TWO MONTHS of the mailing date of this final action and the advisory action is not mailed until after the end of the THREE-MONTH shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed, and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than SIX MONTHS from the date of this final action.

Any inquiry concerning this communication or earlier communications from the examiner should be directed to Joseph D. Torres whose telephone number is (571) 272-3829. The examiner can normally be reached on M-F 8-5.

If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Albert Decady can be reached on (571) 272-3819. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

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Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

Joseph D. Torres, PhD  
Primary Examiner  
Art Unit 2133

